

REMARKS

Applicants submit this Amendment After Final in response to the final Office Action mailed September 27, 2010. Claims 12, 14, 16-20, and 22 are pending in this application, of which claim 12 is independent. By this Reply, Applicants propose amending claim 12. No new matter would be added.

In the final Office Action, the Examiner rejected claims 12, 16-20, and 22 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,876,804 ("Chen") in view of U.S. Patent No. 6,240,748 ("Henderson"); rejected claim 14 under 35 U.S.C. § 103(a) as being unpatentable over Chen in view of Henderson, and further in view of U.S. Patent App. Pub. No. 2003/0010066 ("Sasaoka"); rejected claims 12, 16-20, and 22 under 35 U.S.C. § 103(a) as being unpatentable over Chen in view of U.S. Patent No. 6,920,270 ("Galtarossa"); and rejected claim 14 under 35 U.S.C. § 103(a) as being unpatentable over Chen in view of Galtarossa, and further in view of U.S. Patent App. Pub. No. 2003/0010066 ("Sasaoka").

Applicants respectfully traverse all pending rejections for at least the reasons discussed below.

Rejections Under 35 U.S.C. § 103

Applying 35 U.S.C. § 103(a), the Examiner rejected claims 12, 14, 16-20, and 22 as set forth above. However, a *prima facie* case of obviousness, the requirements of which are discussed below, has not been established for each rejected claim as amended.

To establish a *prima facie* case of obviousness, the prior art reference (or references when combined) must disclose all of the claim limitations, or the claim

rejection must explain why the differences between the prior art and the claim limitations would have been obvious to one of ordinary skill in the art. See M.P.E.P. § 2141.

Applicants respectfully submit that the final Office Action fails to establish a *prima facie* case of obviousness because, among other things, none of Chen, Henderson, Sasaoka, or Galtarossa, either alone or in any combination, teaches or renders obvious the subject matter set forth in Applicants' claims. Specifically, no reference cited by the Examiner teaches or renders obvious at least, "a length of each transition zone being less than 20% of a length of the zone of substantially constant amplitude preceding it, and wherein the transition zone has a non-zero length," as recited in amended independent claim 12.

In the final Office Action, the Examiner concedes that Chen does not teach or suggest, "a length of each transition zone being less than 20% of a length of the zone of substantially constant amplitude preceding it." In an attempt to cure this deficiency, the Examiner asserts, "Henderson teaches a well known periodic spin function in the art include sinusoidal, triangular and square, the square profile comprising a substantially constant amplitude zone (figure 11a) and a transition zone that is instantaneous." Office Action at 3. The Examiner then concludes, "An instantaneous transition zone essentially has a distance that is clearly lower than 10% of the distance of substantially constant amplitude zone preceding it, as can be seen in figure 11a." Id. However, even assuming, *arguendo*, that the Examiner can accurately characterize the "instantaneous transition" of Henderson as a "transition zone," nowhere does Henderson teach or render obvious, "wherein the transition zone has a non-zero length."

The Examiner also asserts that Galtarossa teaches “a length of each transition zone being less than 20% of a length of the zone of substantially constant amplitude preceding it.” Specifically, the Examiner asserts, “Galtarossa also teaches trapezoidal spin function is a well known periodic spin function in the art, the spin function comprising a substantially constant amplitude zone (figure 3) and a transition zone (col. 21, [lines] 14-28). According to figure 3, the transition zone is the area wherein the inversion in direction takes place and it appears to be lower than 10% of the distance of substantially constant amplitude zone preceding it.” Office Action at 5. However, Applicants contend that Figure 3 of Galtarossa is not drawn to scale and, using the values found in the specification of Galtarossa, one concludes that the transition zone depicted in Figure 3 is not, in fact, “less than 20% of a length of the zone of substantially constant amplitude preceding it.”

With respect to the trapezoidal function depicted in Figure 3 of Galtarossa, that reference teaches a trapezoidal spin function having a period (χ) of 1 and a rate (r) of 0.164 (col. 21, ll. 57-59) and a trapezoidal spin function having a period (χ) of 8m and a value for r of 1.5m (col. 24, ll. 2-3). In the first example, the transition zone has a length of $2r = 0.328$ ($0.164 * 2$), the substantially constant amplitude zone has a length of $(\chi/2 - 2r) = 0.172$. Thus, the ratio between the transition zone length and the substantially constant amplitude zone length is equal to 1.9. In the second example, the transition zone has a length of $2r = 3m$, the substantially constant amplitude zone has a length of $(\chi/2 - 2r) = 1m$. Thus, the ratio between the transition zone length and the substantially constant amplitude zone length is equal to 3.

Therefore, Galtarossa does not teach or render obvious, a length of each transition zone being less than 20% of a length of the zone of substantially constant amplitude preceding it."

Furthermore, Applicants note that Galtarossa states that the period (p) of the spin function should be shorter than 20m. Galtarossa at col. 15, ll. 19-20. As examples Galtarossa mentions sinusoidal spin functions having a period of 4.8m (example 4, col. 22, ll. 29-65) 5m (example 6, col. 23, ll. 9-10), 15m (example 7, col. 23, ll. 29-30), and a trapezoidal spin function having a period χ of 8m (example 9, col. 24, ll. 2-3). A periodic spin function having a period shorter than 20m means that in a length of fiber of 20nm, the number of inversions of the spin direction is greater than 2. For example, a trapezoidal spin function having a period χ of 8m will have 5 inversions of the spin direction in a length of fiber of 20nm. Accordingly, the teachings of Galtarossa, i.e., using a period shorter than 20m, are in sharp contrast with the teachings of Chen, i.e., using a period higher than 10m, preferably higher than 20m, more preferably higher than 50m (col. 6, ll. 63-65). Therefore, one of ordinary skill in the art would have been discouraged from combining the teachings of Chen with the teachings of Galtarossa.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of amended independent claim 12 under 35 U.S.C. § 103(a) as being unpatentable over Chen, Henderson, Sasaoka, and Galtarossa.

Moreover, claims 14, 16-20, and 22 depend from amended independent claim 12, and thus, contain all the elements and recitations thereof. As a result, Applicants similarly request that the Examiner reconsider and withdraw the rejection of claims 14,

16-20, and 22 under § 103(a) as being unpatentable over Chen, Henderson, Sasaoka, and Galtarossa.

Claim Scope

It is to be understood that Applicants are in no way intending to limit the scope of the claims to any exemplary embodiments described in the specification or abstract and/or shown in the drawings. Rather, Applicants believe that they are entitled to have the claims interpreted broadly, to the maximum extent permitted by statute, regulation, and applicable case law.

CONCLUSION

Applicants respectfully request that this Amendment After Final under 37 C.F.R. § 1.116 be entered by the Examiner, placing claims 12, 14, 16-20, and 22 in condition for allowance. Applicants submit that the proposed amendment of claim 12 does not raise new issues or necessitate the undertaking of any additional search of the art by the Examiner.

Furthermore, Applicants respectfully point out that the final Office Action presented some new arguments as to the application of the art against Applicants' claims. It is respectfully submitted that the entering of the Amendment would allow Applicants to reply to the final rejections and place the application in condition for allowance.

Finally, Applicants submit that the entry of the Amendment would place the application in better form for appeal, should the Examiner dispute the patentability of the pending claims.

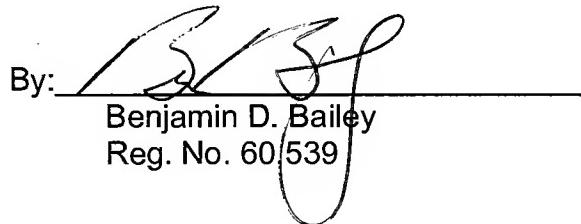
In view of the foregoing remarks, Applicants submit that the claims are neither anticipated nor rendered obvious in view of the prior art references cited against this application. Applicants therefore request the entry of this Amendment, the Examiner's reconsideration and reexamination of the application, and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to Deposit Account 06-0916.

Respectfully submitted,

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